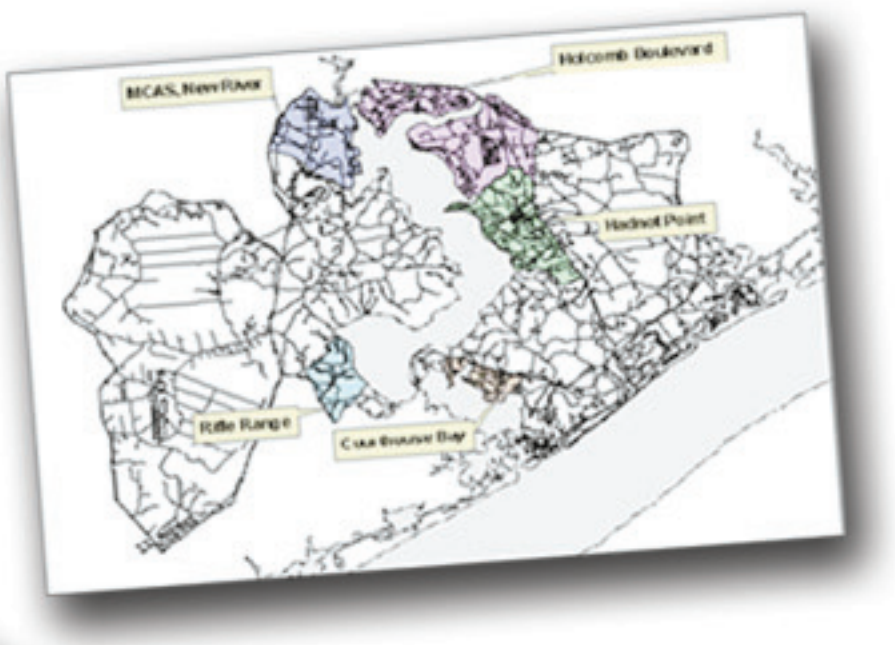
Do you know your H_2O?



HOW DRINKING WATER SOURCES ARE PROTECTED AT CAMP LEJEUNE

This is the third of a three part series on drinking water at Camp Lejeune and New River. The first article in the series addressed our current sampling and testing efforts to ensure that the water you drink is safe. Last week we addressed where our water comes from and the process we use to treat the water. This final article in the series will provide some information on actions being taken aboard the base to preclude contamination from our drinking water sources.

The following information is intended to help explain the actions that Camp Lejeune has undertaken to ensure you are consuming safe drinking water by protecting the quality of the underground freshwater aquifer – the source of drinking water produced at Camp Lejeune.

Each day, Camp Lejeune produces an average of 7 million gallons of drinking water. This water is pumped from the Castle Hayne Aquifer through 77 deep water wells to one of our five water treatment plants. The Camp Lejeune Wellhead Protection Plan is one tool that base planners use to ensure this drinking water supply is safe and clean.

The purpose of a wellhead protection plan is to identify specific procedures and plans to protect both individual wells and the drinking water aquifer. Protection measures assure that Camp Lejeune can provide an adequate and safe supply of drinking water at all times.

Actions which protect drinking water from contamination include restricting land uses near wellfields, frequent sampling of wells for highly mobile contaminants, locating wellfields in undeveloped areas and constructing wells in a manner that minimizes the potential for contamination from surface sources. The wellhead protection plan also identifies "protection zones" surrounding each well and identifies areas where water resources are plentiful. The Camp Lejeune Wellhead Protection Plan balances the need to protect groundwater supplies with the unique mission responsibilities of an active Federal military installation.

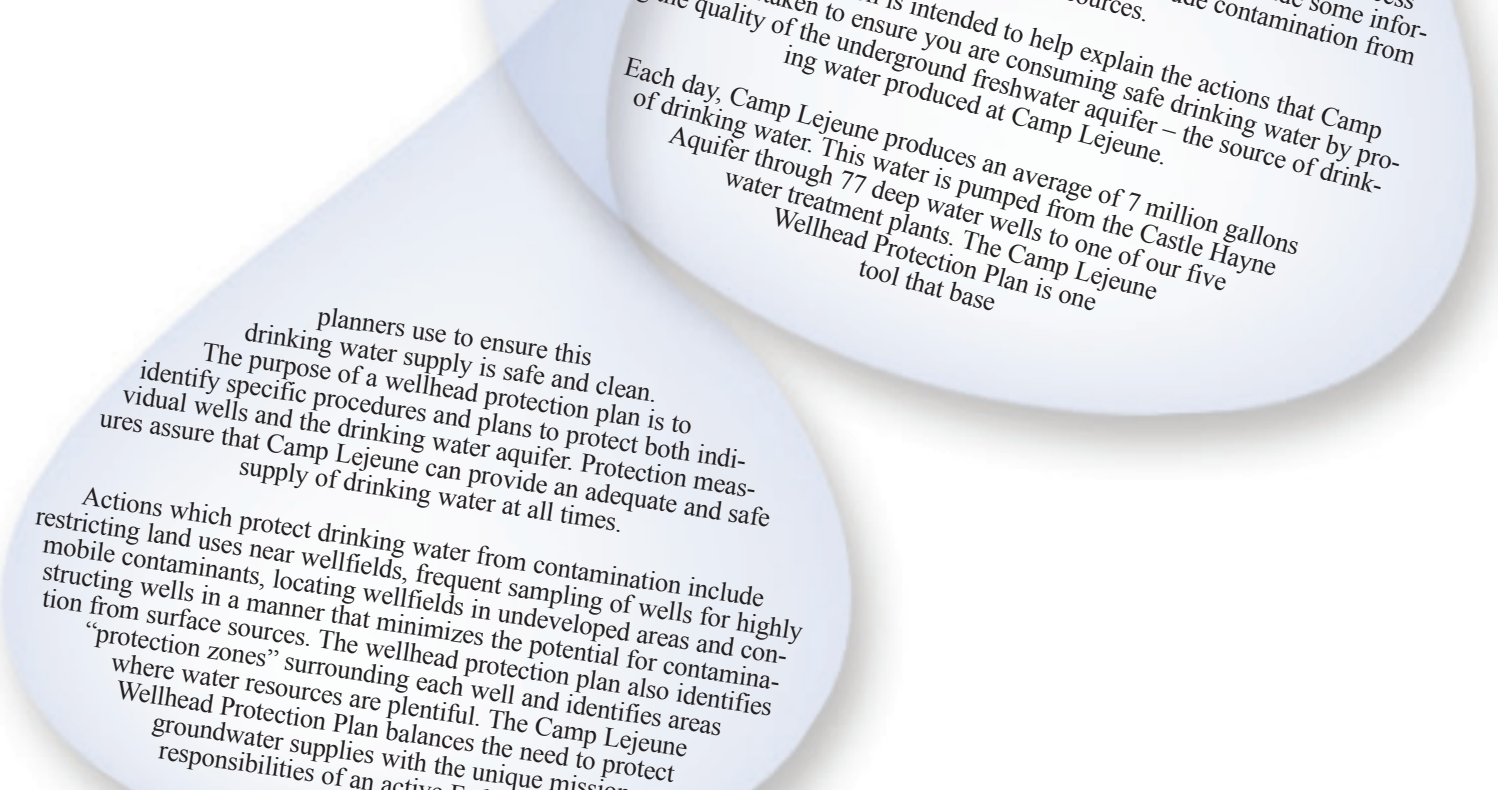


Diagram from EPA Publication 542-F-01-006

This informational series can be viewed at ***www.lejeune.usmc.mil/emd/wq/wq.htm.***

We take protection of occupants and residents of the base very seriously and make sure contaminates do not enter the drinking water supply. When a contaminated site is first identified, part of the initial evaluation is to determine the risk this site poses to human health and the environment. This risk assessment includes the identification of drinking water production wells within 1,500 feet of the site or hydraulically downgradient from the site. These wells are closely monitored and they are closed immediately if monitoring of the contamination plume shows a potential for the well to become contaminated.

Once the extent of the contamination at a site is identified, actions are taken to clean it up. The State Department of Environment and Natural Resources and the Federal Environmental Protection Agency set the standards to which the sites must be remediated. They also must approve the technologies that are being used to perform the cleanup. To clean up sites with petroleum, oil, and lubricants (POLs), we take advantage of the shallow location of the contamination and its desire to volatilize or change from a liquid to a vapor. The primary technology for cleaning up these contaminants is to use an Air Sparging/Soil Vapor Extraction System. This system operates by pushing air through the groundwater. The contamination clings to the air bubbles as they rise to the top of the groundwater table. When the bubbles reach the soil, the system creates a vacuum and pulls the air out of the ground and through a treatment system. To date, we have completed cleaning up 149 POL contaminated sites and are nearing cleanup completion at 16 others. That leaves 17 sites that have on-going active remediation systems running, and 27 final sites that are being assessed for proper corrective action. These clean-up and assessment actions address all known Underground Storage Tank locations aboard the base where releases may have occurred.

The cleanup of chlorinated solvent contaminated sites (like dry cleaning solvents and metal degreasers) is significantly more difficult because these contaminants sink when they reach groundwater and because they tend to adsorb to the soils. Until recently, chlorinated solvent remediation technologies have proven to be very unsuccessful across the nation. Even with recent technological advancements, the varying processes are efficient only under certain site conditions. The key to success lies in matching up different technology to the conditions present at the site. To date, Camp Lejeune has had great success with a technology that uses thermal heating to boil the contaminants out of the groundwater and capture the vapors for treatment above ground.

Of course, the best way to ensure that drinking water is safe and clean is to prevent pollutants from ever entering the aquifer in the first place. Because even small amounts of pollutants can contaminate millions of gallons of drinking water, prevention is always the best policy. Therefore, the base implements many precautionary measures to minimize the risk of contaminating this valuable resource. Two of these actions are described below.

Our Underground Storage Tank program provides several examples and includes facilities across the base that use these petroleum storage devices; facilities such as service stations, steam plants, vehicle maintenance shops, and the MCAS New River aviation fueling system. In the past, corrosion of steel tanks led to soil and groundwater contamination at sites scattered across the installation. So during the past decade more that 500 regulated Underground Storage Tanks and more than 2,500 non-regulated Underground Storage Tanks have been removed from aboard the base. Today, in comparison to those numbers, we have minimized the use of Underground Storage Tank systems and have only 72. All but one of these tanks is constructed of corrosion-resistant materials such as fiberglass-reinforced plastic or high-density polyethylene - including nine of 10 tanks that are not required to meet this requirement. Another risk-reduction initiative undertaken is the installation of a computer-based Underground Storage Tank monitoring system that immediately alerts site personnel to a POL release - decreasing the potential for groundwater contamination. We have also removed all known home-heating oil Underground Storage Tanks as a further means of reducing our liability.

With military range sustainability efforts becoming increasingly important to DoD, Camp Lejeune has investigated new technologies to eliminate lead from accumulating at high-volume firing areas such as pistol ranges, and risk becoming a source for eventual groundwater contamination. Over the last few years, the base has undertaken the installation of bullet traps at six small-arms ranges located on Main side, MCAS New River, and in the Greater Sandy Run Area. The bullet traps catch lead and copper projectiles so that they do not enter the environment; the lead and copper are then recycled. The bullet traps also employ vacuum systems that capture lead dust generated from the firing activities. Two more systems are currently under construction at pistol ranges located at Stone Bay.

Protecting our groundwater from contamination is vital, and it is something each of us can help with by properly storing, handling, using, and disposing of all chemicals, fuels, and oil products. If you have any questions about how you can improve your actions in these areas - at work or at home - call 451-1482.

We hope this information gives you a better understanding of what the base is doing to ensure that the drinking water provided is safe for the Marines, Sailors, families and civilians that live, work and train onboard the base. This informational series can be viewed at the following Web site: *http://www.lejeune.usmc.mil.*